OPTICAL FILM COMPRISING POLYARYLATES CONTAINING BIS-(HYDROXYPHENYL)-FLUORENE-ORTHO-DISUBSTITUTED BISPHENOLS

Claims

5 1. A polymeric optical film the polymer of the polymeric optical film consisting essentially of one or more polyarylates having repeating units represented by the general structure:

$$\begin{bmatrix} A - B \end{bmatrix}_n$$

wherein A represents one or more different bisphenolfluorene radicals having the general formula (I):

wherein R_1 and R_2 independently represent an alkyl group, a halogen atom, an alkoxy group, an acyl group, a phenyl group or a nitrile group, with the proviso that R_1 and R_2 are not both an alkyl group; R_3 , R_4 , R_5 and R_6 represent a hydrogen atom, an alkyl group, a halogen, an alkoxy group, an acyl group, a phenyl group, a nitro group, or a nitrile group, with the proviso that when R_1 and R_2 are both bromide atoms, at least one of R_3 , R_4 , R_5 and R_6 is different from hydrogen atom;

B represents one or more different dicarboxy radicals having the formula:

wherein X is a divalent aromatic hydrocarbon group having from 6 to 20 carbon atoms, and n is the number of the repeating units which build up the polymer and is a positive integer higher than 20.

2. The optical film of claim 1, wherein said bisphenolfluorene radical A is represented by the formula:

$$R_1$$
 R_1
 R_2
 R_2
 R_3
 R_4
 R_5
(II)

10

15

5

wherein R_1 and R_2 represent an alkyl group or a halogen with the proviso that R_1 and R_2 are not both an alkyl group; and

wherein X in said dicarboxy radical B is a 6 to 12 carbon atom divalent aromatic hydrocarbon group.

3. The optical film of claim 1, wherein said divalent aromatic hydrocarbon group X is selected from the group consisting of:

4. The optical film of claim 1, wherein said one or more polyarylates are represented by the formula:

$$R_1$$
 R_1
 R_2
 R_2
 R_4
 R_5
 R_5

wherein R₁ and R₂ represent an alkyl group, a halogen atom, an alkoxy group, an acyl group, a phenyl group or a nitrile group, with the proviso that R₁ and R₂ are not both an alkyl group; R₅ and R₆ represent a hydrogen atom, an alkyl group, a halogen, an alkoxy group, an acyl group, a phenyl group, a nitro group, or a nitrile group, with the proviso that when R₁ and R₂ are both bromide atoms, at least one of R₅ and R₆ is different from hydrogen atom; and n is a positive integer higher than 20

5. The optical film of claim 3, wherein said one or more polyarylates comprise a at least a

first dicarboxy radical according to the formula

5

and a second dicarboxy radical differing in structure from said at least a first dicarboxy radical, the second dicarboxy radical having the formula

the weight ratio between said first dicarboxy radical and said second dicarboxy radical being of from 1:10 to 10:1 and X is as previously defined.

- 6. The optical film of claim 5, wherein said first dicarboxy radical is deriving from isophthalic acid and said second dicarboxy radical is deriving from terephthalic acid.
 - 7. The optical film of claim 6, wherein the weight ratio between said first and second dicarboxy radicals is of from 1:4 to 4:1.
- 15 8. The optical film of claim 1, wherein said one or more polyarylates are selected from the group consisting of:

$$C_2H_5$$
 C_2H_5
 C_2H_5
 C_2H_5
 C_2H_5

$$C_3H_7$$
 C_3H_7
 C_3H_7
 C_3H_7
 C_3H_7
 C_3H_7

CH₃ -0 -CH₃

(8)

Br Br

- 5 wherein n is the number of repeating units and is an integer higher than 20.
 - 9. A polymeric optical film wherein the polymer of the optical film consists of one or more polyarylates having repeating units represented by the general structure:

$$\begin{bmatrix} A - B \end{bmatrix}_n$$

wherein A represents one or more different bisphenolfluorene radicals having the general formula (I):

wherein R_1 and R_2 independently represent an alkyl group, a halogen atom, an alkoxy group, an acyl group, a phenyl group or a nitrile group, with the proviso that R_1 and R_2 are not both an alkyl group; R_3 , R_4 , R_5 and R_6 represent a hydrogen atom, an alkyl group, a halogen, an alkoxy group, an acyl group, a phenyl group, a nitro group, or a nitrile group, with the proviso that when R_1 and R_2 are both bromide atoms, at least one of R_3 , R_4 , R_5 and R_6 is different from hydrogen atom;

B represents one or more different dicarboxy radicals having the formula:

5

10

15

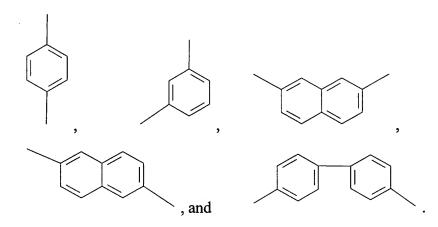
wherein X is a divalent aromatic hydrocarbon group having from 6 to 20 carbon atoms, and n is the number of the repeating units which build up the polymer and is a positive integer higher than 20.

10. The polymeric optical film of claim 9, wherein said bisphenolfluorene radical A is represented by the formula:

$$R_1$$
 R_2
 R_2
 R_3
 R_4
 R_5
 R_5
(II)

wherein R_1 and R_2 represent an alkyl group or a halogen with the proviso that R_1 and R_2 are not both an alkyl group; and

- 5 wherein X in said dicarboxy radical B is a 6 to 12 carbon atom divalent aromatic hydrocarbon group.
 - 11. The polymeric optical film of claim 9, wherein said divalent hydrocarbon group X is selected from the group consisting of:



10

12. The polymeric optical film of claim 9, wherein said one or more polyarylates are represented by the formula:

$$R_1$$
 R_1 R_2 R_2 R_4 R_5 R_5

10

15

wherein R_1 and R_2 represent an alkyl group, a halogen atom, an alkoxy group, an acyl group, a phenyl group or a nitrile group, with the proviso that R_1 and R_2 are not both an alkyl group; R_5 and R_6 represent a hydrogen atom, an alkyl group, a halogen, an alkoxy group, an acyl group, a phenyl group, a nitro group, or a nitrile group; and n is a positive integer higher than 20.

13. The optical film of claim 11, wherein said one or more polyarylates comprise a at least a first dicarboxy radical according to the formula

and a second dicarboxy radical differing in structure from said at least a first dicarboxy radical, the second dicarboxy radical having the formula

the weight ratio between said first dicarboxy radical and said second dicarboxy radical being of from 1:10 to 10:1 and X is as previously defined.

14. The optical film of claim 13, wherein said first dicarboxy radical is derived from isophthalic acid and said second dicarboxy radical is derived from terephthalic acid.

- 15. The optical film of claim 14, wherein the weight ratio between said first and second dicarboxy radicals is of from 1:4 to 4:1.
- 5 16. The optical film of claim 1 wherein the polymer has a Tg of between 342°C and 365°C.
 - 17. The optical film of claim 6 wherein the polymer has a Tg of between 342°C and 365°C.
 - 18. The optical film of claim 9 wherein the polymer has a Tg of between 342°C and 365°C.

- 19. The optical film of claim 14 wherein the polymer has a Tg of between 342°C and 365°C.
- 20. A liquid crystal screen comprising at least one panel or flattened layer represented by the optical polymeric film of claim 1.
- 21. An electroluminescent screen comprising at least one support and protective layer represented by the optical polymeric film of claim 1.
- 22. A polarizer transparent conducting film comprising at least one layer represented by the
 20 optical polymeric film of claim 1.
 - 23. A liquid crystal screen comprising at least one panel or flattened layer represented by the optical polymeric film of claim 9.
- 24. An electroluminescent screen comprising at least one support and protective layer represented by the optical polymeric film of claim 9.

25. A polarizer transparent conducting film comprising at least one layer represented by the optical polymeric film of claim 9.